

We claim:

1. A crystalline tolterodine tartrate form I, characterized by an x-ray powder diffraction spectrum having peaks expressed as 2θ at about 11.9, 13.6, 14.2,
5 15.9, 16.9, 18.4, 18.8, 20.4, 22.0, 23.9, 25.4, 26.3 and 29.8 degrees.
2. A crystalline tolterodine tartrate form I as defined in claim 1, further characterized by an x-ray powder diffraction spectrum as in figure 1.
3. A process for preparation of tolterodine tartrate form I as defined in claim 1, which comprises the steps of:
10 a) dissolving tolterodine free base in a suitable solvent;
b) adding tartaric acid; and
c) isolating tolterodine tartrate form I;
wherein the suitable solvent is selected from the group consisting of ethanol, methylene dichloride, chloroform, acetone, acetonitrile and 1,4-dioxane.
- 15 4. A process according to claim 3, wherein the suitable solvent is ethanol.
5. A process according to claim 3, wherein the suitable solvent is acetone.
6. A crystalline tolterodine tartrate form II, characterized by an x-ray powder diffraction spectrum having peaks expressed as 2θ at about 8.7, 9.0, 9.6,
20 10.1, 10.4, 11.9, 14.0, 15.7, 16.9, 17.6, 17.9, 18.4, 18.7, 20.0, 20.5, 22.1, 24.5, 29.1 and 35.9 degrees.
7. A crystalline tolterodine tartrate form II as defined in claim 6, further characterized by an x-ray powder diffraction spectrum as in figure 2.
8. A process for preparation of tolterodine tartrate form II as defined in claim 6, which comprises the steps of:
25 a) dissolving tolterodine free base in ethyl acetate;
b) adding tartaric acid; and
c) isolating tolterodine tartrate form II.
9. A crystalline tolterodine tartrate form III, characterized by an x-ray powder diffraction spectrum having peaks expressed as 2θ at about 9.1, 9.7, 10.6,
30 11.7, 11.9, 12.7, 14.3, 15.7, 17.9, 18.5, 18.8, 19.1, 20.1, 20.4, 22.1, 22.5, 25.1, 32.8 and 35.5 degrees.
10. A crystalline tolterodine tartrate form III as defined in claim 9, further characterized by an x-ray powder diffraction spectrum as in figure 3.

11. A process for preparation of tolterodine tartrate form III as defined in claim 9,
which comprises the steps of:
- a) dissolving tolterodine free base in methyl tert-butyl ether;
 - b) adding tartaric acid; and
 - 5 c) isolating tolterodine tartrate form III.
12. A crystalline tolterodine tartrate form IV, characterized by an x-ray powder
diffraction spectrum having peaks expressed as 2θ at about 7.8, 9.8, 15.2,
17.2, 17.7, 18.4, 18.9, 20.3 and 25.9 degrees.
13. A crystalline tolterodine tartrate form IV as defined in claim 12, further
10 characterized by an x-ray powder diffraction spectrum as in figure 4.
14. A process for preparation of tolterodine tartrate form IV as defined in claim
12, which comprises the steps of:
- a) mixing tolterodine tartrate, an alcohol and water; and
 - b) removing the solvents from the solution formed in step (a) by freeze drying;
 - 15 wherein the alcohol is selected from the group consisting of methanol, ethanol,
isopropyl alcohol and n-butanol.
15. A process according to claim 14, wherein the suitable alcohol is methanol.
16. A process according to claim 14, wherein the suitable alcohol is ethanol.
17. Amorphous tolterodine tartrate characterized by an x-ray powder diffraction
20 spectrum as in figure 5.
18. A process for preparation of amorphous tolterodine tartrate as defined in
claim 17, which comprises the steps of:
- a) mixing tolterodine tartrate, an alcohol and water; and
 - b) removing the solvents from the solution formed in step (a) by vacuum drying
25 or by spray drying;
- wherein the alcohol is selected from the group consisting of methanol, ethanol,
isopropyl alcohol and n-butanol.
19. A process according to claim 18, wherein the suitable alcohol is methanol.
20. A process according to claim 18, wherein the suitable alcohol is ethanol.
- 30 21. A process according to claim 18, wherein the solvents are removed by
vacuum drying.
22. A process according to claim 18, wherein the solvents are removed by spray
drying.

23. A pharmaceutical composition comprising a polymorphic form of tolterodine tartrate and a pharmaceutically acceptable carrier or diluent.
24. A pharmaceutical composition as defined in claim 24, wherein the polymorphic form is tolterodine tartrate form I of claim 1.
- 5 25. A pharmaceutical composition as defined in claim 24, wherein the polymorphic form is tolterodine tartrate form II of claim 6.
26. A pharmaceutical composition as defined in claim 24, wherein the polymorphic form is tolterodine tartrate form III of claim 9.
27. A pharmaceutical composition as defined in claim 24, wherein the polymorphic form is tolterodine tartrate form IV of claim 12.
- 10 28. A pharmaceutical composition as defined in claim 24, wherein the polymorphic form is amorphous tolterodine tartrate of claim 17.